

What is claimed is:

- 1 1. A method for collecting a fluid sample having a select concentration of  
2 particles, comprising the steps of  
3 providing a fluid suspension of dispersed particles,  
4 disposing a filter having a first side and a second side within said fluid  
5 suspension and flowing said fluid suspension across said filter from said first side  
6 to said second side such that a substantially known quantity of particles collect  
7 onto said first side of said filter,  
8 removing said filter and said particles collected thereon from said fluid  
9 suspension, and  
10 passing a known volume of collection fluid through said filter, to remove  
11 substantially said particles collected on said first side, and to collect said particles  
12 within said known volume of collection fluid.
- 1 2. A method according to claim 1 wherein said step of disposing a filter  
2 includes the step of  
3 providing a particle collection device having an intake port and an  
4 evacuation port and having said filter spanning said intake port.
- 1 3. A method according to claim 2 wherein said step of flowing said fluid  
2 includes the step of  
3 evacuating said particle collection device to draw fluid across said filter and  
4 through said intake port and into said collection device.
- 1 4. A method according to claim 1 wherein said step of passing a known  
2 quantity of collection fluid through said filter includes the step of

3           applying a select fluid pressure within said collection device to force fluid  
4   collected therein back across said filter.

1   5.     A method according to claim 4 wherein said step of passing a known  
2   volume of collection fluid through said filter includes the step of  
3           disposing said filter collection device at a select angle and to generate  
4   thereby a drip of said collection fluid having said particles collected therein.

1   6.     A method according to claim 1 comprising the further step of  
2           selecting a filter having a pore size adapted for collecting particles of a  
3   predetermined size.

1   7.     A method according to claim 1 including the further step of  
2           lysing said collected particles.

1   8.     A method according to claim 1 comprising the further step of  
2           providing a portion of said collected particles in said known volume of  
3   collection fluid as a sample for a diagnostic assay.

1   9.     A method according to claim 1 wherein said step of flowing said fluid  
2   suspension includes the step of  
3           measuring a characteristic representative of the quantity of particles  
4   collected against said filter.

1   10.    A method according to claim 9 including the further step of  
2           interrupting said step of flowing said fluid suspension responsive to a  
3   measured characteristic representative of a pre-selected quantity of particles.

1 11. A method according to claim 1 wherein said step of flowing said fluid  
2 suspension includes the further step of  
3 applying a known pressure to said fluid suspension.

1 12. A method according to claim 1 wherein said step of flowing said fluid  
2 suspension includes the further step of  
3 applying a succession of known pressures to said fluid suspension.

1 13. A method according to claim 11 wherein said step of flowing said fluid  
2 suspension includes the further step of  
3 measuring a characteristic representative of a rate of change of pressure.

1 14. A method according to claim 1 wherein said step of providing a fluid  
2 suspension of dispersed cells includes the step of  
3 providing said collected particles within said known volume of fluid, for  
4 incrementally increasing the concentration of said particles within said known  
5 volume of fluid.

1 15. A method according to claim 1 wherein said step of providing a fluid  
2 suspension of dispersed cells comprises the further steps of  
3 actuating a fluid having a sample material disposed therein.

1 16. Apparatus for reproducibly collecting a sample having a select  
2 concentration, comprising  
3 a filter having a first side and a second side and being submersible within a  
4 fluid that contains a quantity of particles,  
5 a source of fluid pressure coupled to a pressure monitor for providing a  
6 flow of said fluid across said filter from said first side to said second side such that  
7 a substantially known quantity of particles collect onto said first side of said filter,

8           an actuator for removing said filter and said particles collected thereon  
9       from said fluid suspension, and

10           a source of fluid having volumetric control for passing a known volume of  
11       collection fluid through said filter, to remove substantially said particles collected  
12       on said first side, and to collect said particles within said known volume of  
13       collection fluid.

1       17.    A method for determining a concentration of a fluid sample, comprising the  
2       steps of

3           providing a fluid suspension of dispersed particles to a particle collection  
4       element,

5           generating a flow of said fluid suspension into said particle collection  
6       element,

7           measuring a flow characteristic of said flow of fluid suspension being  
8       representative of a quantity of said dispersed particles,

9           determining a volume of said fluid flow having flowed to said particle  
10      collection element, and

11           determining, as a function of said flow characteristic and said volume, said  
12      concentration of dispersed particles within said fluid sample.

1       18.    A method according to claim 17 wherein said step of generating said flow  
2       of said fluid suspension includes the step of

3           flowing substantially all of said fluid sample to said particle collection  
4       element, to collect substantially all of said disposed particles from said fluid  
5       sample.

1       19.    A method according to claim 18 including the further step of

2           removing said collected dispersed particles from said fluid sample.

1 20. A method according to claim 19 including the further step of  
2 testing said fluid sample to detect a presence of said dispersed particles  
3 within said fluid sample.

1 21. A method according to claim 17 wherein said step generating said flow of  
2 said fluid suspension includes the step of  
3 generating a flow of a known volume of said fluid suspension.

1 22. A method according to claim 21 wherein said step of determining a volume  
2 of said fluid flow having passed to said particle collection element includes the step  
3 of  
4 recording said known volume of said fluid suspension.

1 23. A method according to claim 17 including the further step of  
2 comparing said concentration to a threshold value representative of a  
3 threshold concentration for achieving a valid test of said fluid sample.

1 24. A method according to claim 17 where said step of measuring a flow  
2 characteristic includes the step of  
3 measuring a rate of flow of said fluid suspension.